

REMARKS

We have amended the title of the application and have amended Fig. 1 of the drawings to address the Examiner's objections to the Drawings. In particular, we have amended Fig. 1 to show a signal line that connects the interrupt/restart circuit 43 to a node between the encoder 14 and the laser drive circuit 16. The amendment of Fig. 1 is consistent with the specification (see page 15, lines 4-7). The signal line, appears in the original Japanese applications, JP 11-331419 and JP 2000-322550, from which this application claims priority. For the Examiner's convenience, Fig. 1 of the original Japanese application, JP11-331419, is attached to this letter, in which the signal line is highlighted. Please refer to the certified copies of the original Japanese applications, which were submitted to the USPTO on February 23, 2001.

35 USC §112, First Paragraph Rejections

It appears that the Examiner's rejection of claims 1-5 and 7-9 under 35 USC §112, first paragraph is based on his assumption that the simultaneous existence of an underrun condition and an appropriate sync pattern for indicating that the laser beam is generating a relatively low power level. We disagree with the Examiner's rejection. More accurately, applicant's inventions are directed to interrupting data recording to prevent buffer underrun error when the following two conditions are satisfied:

- (i) buffer memory is in the state in which buffer underrun may occur; and
- (ii) the laser beam is generated at a relatively low power level in accordance with recoding data.

We submit that the specification contains a written description of the invention as to enable any person skilled in the art to make and use the same and the best mode contemplated by the inventor for carrying out the inventions, recited in independent claims 1, 3, 7, and 9. For example, as described in page 12, lines 7-12, the interrupt circuit 43 (which is a part of system control circuit 22) is controlled by a recording control circuit 21. As shown in Fig. 1, the system control circuit 22 is connected to a buffer underrun determination circuit 20 via the recording

control circuit 21. As described at page 10, line 35 to page 11, line 5, the recording control circuit 21 controls the system control circuit 22 based on the determination result of the buffer underrun determination circuit 20. That is, the condition in which buffer underrun may occur is detected by the buffer underrun determination circuit 20, and the condition in which the laser is generated at a relatively low power level is detected by the interrupt circuit 43. In one embodiment a sync pattern is allocated to the head of each sector and address memories 47 and 48 which hold address data corresponding to sector addresses (see page 20 line 35 to page 21, line 14 of the specification). Thus, we submit that the disclosure supports applicant's claims and that the scope of those claims is not inconsistent with what is disclosed in applicant's specification.

35 USC §112, Second Paragraph Rejections

We have amended independent claim 3 to address the Examiner's rejection. In particular, we have amended claim 3 to the controller includes both restart and interrupt control circuitry. As described in the specification, applicant's controller includes an interrupt/restart circuit 43 which, in this embodiment, are arranged together, although in other embodiments may be separated.

Prior Art Rejections

The Examiner rejected independent claims 1, 3, and 9 as unpatentable over JP 2000-40302 further considered with either Yamasaki and Yoshikawa, or alternatively with Yokota. We submit that the rejection is improper. Applicant's application claims the benefit of priority from JP11-331419 filed on November 22, 1999, which is earlier than the publication date, February 8, 2000, of JP2000-40302 (corresponding to EP0974966A1). *So what*

We further submit that none of Yamasaki, Yoshikawa, or Yokota disclose or suggest preventing buffer underrun error. Yamasaki (US 5,521,893) discloses an optical magnetic disc recorder which interrupts recording when an abnormality detection circuit 7 or 9 detects an abnormality, such as excess power of a laser beam. Buffer underrun error does not relate to a

laser abnormality. Yoshikawa (US 4,858,219) discloses a data recorder which maintains power level of laser flux within a predetermined range and interrupts data recording when the power level of laser flux is abnormal. Yokota (US 5,305,298) discloses means for inhibiting light irradiation when the amount of laser beam is lower than a predetermined level.

The Examiner also rejected independent claims 7 and 9 as unpatentable over JP 2000-40302 and further considered with Koishi/Official notice. As stated above, applicant's application claims the benefit of priority from JP11-331419 filed on November 22, 1999, which is earlier than the publication date, February 8, 2000, of JP2000-40302 (corresponding to EP0974966A1).

Furthermore, Koishi (US 4,800,548) does not teach preventing buffer underrun error. Koishi merely discloses a recording apparatus that alters laser power from a recording level to a nonrecording level if track jumping is detected when recording. ((

The Examiner also rejected independent claims 1, 3 and 9 as being unpatentable over JP IO-63433 and further considered with Yamasaki and Yoshikawa, or Takasugi.

JP IO-63433 corresponds to Kuroda (US 5,815,472), both of which disclose interrupting and restarting data recording in accordance with an amount of storage information temporarily stored in a buffer memory for preventing buffer underrun error. However, Kuroda discloses that a portion of data (indicated as "D" in Fig. 5b) is overwritten and destroyed when restarting data recording and that it is unnecessary to avoid such data destruction because the destroyed data can be recovered by error correction (see col. 14, line 61 to col. 15, line 5). Therefore, Kuroda does not disclose preventing buffer underrun error by interrupting data recording when a laser is generated at a relatively low power level and buffer underrun error may occur. Because Kuroda does not disclose applicant's claimed invention, he does not provide the important advantage of preventing data destruction and eliminating the requirement of error correction of the destroyed data because data recording is interrupted when a laser is generated at a relatively low power level.

Because Kuroda does not require any operation for preventing buffer underrun error, we submit that there is no motivation for combining the teachings of Kuroda with the other references cited by the Examiner. ll✓

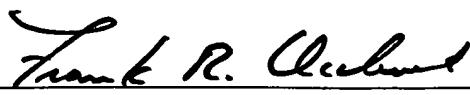
Takasugi (US 4,507,767) discloses interrupting data recording when the laser power is lower than an appropriate range, that is, when laser is in an abnormal state. In contrast, in the present invention, data recording is interrupted to prevent buffer underrun error even if the laser is in a normal state. Please note that the term "a relatively low power level" of the present invention is not an abnormal state (see page 9, line 33 to page 10, lines 12 of the specification). In the present invention, the lower level laser power is generated in accordance with data. If Takasugi and Kuroda were combined, the resulting apparatus would need to wait for the occurrence of a laser malfunction, and interrupt data recording after the laser is in an abnormal state when buffer memory is in the state in which buffer underrun may occur. Apparently, it is impossible to prevent buffer underrun error if interrupting data recording is delayed until occurrence of a laser malfunction.

We submit therefore that the Examiner's rejections of independent claims 1, 3, 7, and 9 by these references is improper and should be withdrawn.

Enclosed is a check for \$84.00 for an additional independent claim and a Petition for Three Months Extension of Time with a check for \$930.00 for the required fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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Fig. 1

